

## INTERCONNECTOR FOR COUPLING ISO TOP CASTINGS ON CONTAINERS

### CROSS-REFERENCE TO RELATED APPLICATION

The present application claims the benefit of U.S. Provisional Appln. No. 60/449,607, filed February 26, 2003.

### BACKGROUND OF THE INVENTION

#### TECHNICAL FIELD OF THE INVENTION

[0001] The invention is directed to an interconnector device designed to couple together the top corner castings of two ISO containers when they are arranged coaxially along their longitudinal lengths. The interconnector device provides both horizontal pull strength and compression as well as the required three inch (3") spacer between the opposite outer faces of the coupled corner castings.

#### PRIOR ART

[0002] There are several known designs of interconnectors to couple together twenty foot (20') and smaller containers when they are arranged coaxially, but they all must be inserted horizontally and they are all made as a one piece axle with either fixed/welded or loose/threaded heads that lock inside the corner casting. There is no known prior art where an interconnector is made in two parts such as the disclosed design.

### SUMMARY OF THE INVENTION

[0003] It is an object of one embodiment of the present invention to provide an interconnector device which is designed to couple together the top corner castings of two ISO containers when coaxially arranged.

[0004] It is a further object of one embodiment of the present invention to provide an interconnector device which provides ease of connection.

[0005] It is a further object of one embodiment of the present invention to provide an interconnector device which provides both horizontal pull strength and/or compression between the ISO containers.

[0006] It is a further object of one embodiment of the present invention to provide an interconnector device which provides a three inch (3") spacer between the opposite outer faces of the castings as required by current ISO specifications.

[0007] It is a further object of one embodiment of the present invention to provide an interconnector device which has two separate but connectable pieces rather than just one piece.

[0008] It is a further object of one embodiment of the present invention to provide an interconnector device which

overcomes the problem of inadequate grip of prior art designs that must be inserted horizontally.

[0009] It is a further object of one embodiment of the present invention to provide an interconnector device which allows the operator to attach the unit at an angle at each container.

[0010] It is a further object of one embodiment of the present invention to provide an interconnector device which is not restricted to a locking/gripping head size that only fits horizontally through the nearly square so-called "A-Corn" end aperture holes on the upper ISO castings.

[0011] It is a further object of one embodiment of the present invention to provide an interconnector device which includes two separate but connectable pieces that are fitted in place on two containers, and when the containers are moved together and the two pieces can be locked together by means of a locking pin, if desirable. The locking pin can be eliminated entirely in situations where the interconnector remains in a state of compression between the ISO containers.

[0012] The present invention is not to be taken as limited to or by the aforementioned objects.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0013] Fig. 1 is a perspective view of a fully assembled interconnector device according to one embodiment of the invention.

[0014] Fig. 2 is an elevation view of the device of Fig. 1.

[0015] Fig. 3 is a cross-section along section line 3-3 in Fig. 4.

[0016] Fig. 4 is a top view of the device of Fig. 2.

[0017] Fig. 5 is a side view of the device of Fig. 2.

[0018] Fig. 6 is a top view of the device of Fig. 2 shown engaged between the two top corner castings of two ISO containers arranged coaxially.

[0019] Fig. 7 is a vertical cross-section through the longitudinal axis of the corner castings and device of Fig. 6 with the device fully shown.

#### DETAILED DESCRIPTION OF THE INVENTION

[0020] Fig. 1 is a perspective view of a fully assembled interconnector device 100 according to one embodiment of the invention.

[0021] As shown in Figs. 2 and 3, the interconnector device 100 has two connection parts 1 and 2 which are fixed together by a pin 3. Connection part 1 has a body portion 5 which has a cross-section substantially corresponding to the opening of either side through-hole 10 of the corner castings 11 as shown

in Fig. 7. A flange 6 which extends out from and around body portion 5 has a cross section which is larger than either side-through-hole 10 of the corner castings 11. Projection 7, which also extends out from body portion 5, is provided with a through-hole 8 to accommodate pin 3. Finally, a hook portion 9 which extends out from body portion 5 is adapted to fit through either side-through-hole 10 at an angle, if necessary, and engage inside wall of the casting 11 above side-through-hole 10.

[0022] Connection part 2, which has a body portion 12, is provided with a flange 13 which extends out from and around body portion 12 to form a recess 14. Recess 14 is adapted to receive and engage projection 7 of connection part 1 after which pin 3 is engaged in through-hole 15 of flange 13 and through-hole 8 of projection 7. The cross-section through flange 13 of connection part 2 is equivalent to that of flange 6 of connection part 1 and therefore larger than the opening of the side-through-hole 10 of the corresponding casting 11. Distance 'x' between the sides of flanges 13 and 6 is at least three inches (3") to provide the required spacing between the two connected ISO containers when the interconnector device 100 is in place. The hook 16 extending from body portion 12 of connection part 1 is identical in shape and size to that of hook 9 of connection part 1 and as such engages the

corresponding casting 11 in the same manner as hook 9 engages corresponding casting 11.

[0023] Finally, to maintain pin 3 in engagement in through-holes 8 and 15, a linch pin 4 is inserted through a hole 20 in the bottom portion of pin 3. A linch pin chain 17 is engaged between pin 3 and flange 13 and a linch pin chain 18 engaged between the linch pin 4 and flange 13.

[0024] The interconnector device according to the invention is designed to couple together the top corner castings of two ISO containers when coaxially arranged to provide ease of connection and both horizontal pull strength and/or compression between the ISO containers as well as the required three inch (3") spacer between the opposite outer faces of the castings. The device is designed in two pieces rather than just one to overcome the problem of inadequate grip of prior art designs that must be inserted horizontally. Making the unit in two pieces also allows the operator to attach the unit at an angle at each container and not be restricted to a locking/gripping head size that only fits horizontally through the nearly square so-called "A-Corn" end aperture holes on the upper ISO castings. Once the two halves are fitted in place, the containers are moved together, the two connection parts can be secured together by means of the locking pin 3. However, as noted above, the locking pin 3, linch pin 4, hole

20, pin chains 17, 18 and corresponding through-holes 8, 15 all can be eliminated when the interconnector is used in a situation where the interconnector remains in a state of compression between ISO containers. The bottom ISO corner castings are locked together with conventional interconnectors, such as Buffers model 1208, when two empty twenty-foot (20') (that is, 19' 10-1/2") containers are locked together in the described way. When locked together they can be lifted as one forty-foot (40') unit, thereby reducing handling, loading and unloading charges to half the cost.

[0025] The foregoing description of the specific embodiments will so fully reveal the general nature of the invention that others can, by applying current knowledge, readily modify and/or adapt for various applications such specific embodiments without departing from the generic concept, and, therefore, such adaptations and modifications should and are intended to be comprehended within the meaning and range of equivalents of the disclosed embodiments. It is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.